

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2007-\_\_\_\_\_

WASTE DISCHARGE REQUIREMENTS  
FOR  
SYNAGRO WEST, LLC AND GARY SILVA  
SILVA RANCH WET WEATHER BIOSOLIDS STORAGE FACILITY  
CLASS II WASTE PILE AND CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, AND CLOSURE  
SACRAMENTO COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. Synagro West, LLC (facility owner and operator) and Gary Silva (landowner), hereafter referred to jointly as Discharger, propose to construct and operate a Class II waste pile and Class II surface impoundment at the Silva Ranch for wet weather storage of biosolids. The Silva Ranch is a 2,800-acre property used for pasturing and growing crops for a variety of animals. Municipal biosolids are accepted at the ranch and applied to land.
2. Waste Discharge Requirements (WDRs) Order No. 95-064 and WDRs Order No. 98-023 were adopted by the Regional Water Board to regulate biosolids application to land at separate areas of the Silva Ranch designated as Silva I and Silva II. These Orders remain in effect until revised or rescinded. This companion Order regulates the storage of biosolids during the wet season and is necessary since WDRs 95-064 and 98-023 do not allow biosolids to be applied to land during periods of wet weather.
3. The Silva Ranch Wet Weather Biosolids Storage Facility (the facility) is located approximately two miles northeast of Clay Station Road and Twin Cities Road in Sacramento County. This property is described by Assessor's Parcel Numbers 136-0280-023, 138-0060-028, 140-0030-014, 140-0030-015, and 140-0050-021 in Section 19, T6N, R7E, MDB&M. The facility location is shown on Attachment A, which is incorporated herein and made a part of this Order, by reference.
4. The Discharger submitted a Report of Waste Discharge (RWD) application for waste discharge requirements dated 15 June 2007 for a proposed Class II waste pile and surface impoundment with an engineered alternative to a prescriptive liner. The RWD application followed the previously submitted report dated 8 January 2007 entitled *Construction Workplan* for the facility. 1 May 2007 Amendments to the work plan were submitted on 22 June 2007. The amended work plan includes information necessary for the technical report portion of the RWD including, but not limited to, the proposed design for the liner systems, preliminary closure and postclosure maintenance plans, financial assurances cost estimates, construction quality assurance plans for liner construction and facility clean closure, final design drawings and technical specifications for liner installation, an

operations plan, sampling procedures, an emergency response plan, and a facility monitoring plan. This Order approves each of the plans.

5. The proposed Class II waste pile will be used to store up to 32,000 cubic yards of municipal biosolids during wet weather or wet soil conditions. The proposed Class II surface impoundment will be constructed at the lowest end of the waste pile to capture and store storm water runoff from the storage area. The waste management units will be constructed at the site of an existing area that has been used previously for storage of biosolids. The existing facility is as shown on Attachment B, which is incorporated herein and made a part of this Order, by reference.

### **WASTE AND WASTE MANAGEMENT UNIT CLASSIFICATION**

6. The State Water Resources Control Board (State Water Board) adopted regulations under Title 27 of the California Code of Regulations (Title 27 CCR), consisting of requirements, waste classifications, and waste management unit classifications designed to protect the beneficial uses of waters of the state for projects involving the discharge of designated waste to land for treatment, storage, or disposal.
7. California Water Code §13173(b) defines "designated waste" to include "[n]on hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations that exceed applicable water quality objectives or that could reasonably be expected to affect beneficial uses of waters of the state as contained in the appropriate state water quality control plan."
8. Municipal biosolids and storm water runoff from areas containing municipal biosolids contain salts, nitrates, and metals at concentrations that could be released in concentrations that exceed applicable water quality objectives, and could reasonably be expected to affect beneficial uses of underlying groundwater when concentrated and stored at one location for extended periods. Therefore, they are a designated waste when stockpiled and stored at the Silva Ranch, especially during periods of wet weather. Pursuant to Title 27 CCR Section 20210, such waste can only be stored at this facility in a Class I or a Class II waste management unit equipped with an engineered liner system and a leachate collection and recovery system (LCRS).

### **SITE DESCRIPTION**

9. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
10. Surface water drainage is to Browns Creek, which is a tributary to Laguna Creek, which is tributary to the Cosumnes River, which is tributary to the Mokelumne River, which is tributary to the Delta, as depicted on interagency hydrologic maps prepared by the California Department of Water Resources in August 1986.

11. The designated beneficial uses of these surface waters, as specified in the Basin Plan, are municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, navigation, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, migration of aquatic organisms, and spawning, reproduction, and/or early development.
12. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.
13. The facility site is relatively flat and located at a regional topographic high point. The site is bordered by gentle, descending slopes to the north, northeast, northwest, southeast, and southwest. The pre-project elevations within the project area range from 183 feet MSL at the southwestern edge of the facility to approximately 169 feet MSL at the northwestern terminus.
14. The three primary active faults zones closest to the proposed facility are the Concord-Green, the Calaveras, and the Hayward Faults located approximately 55, 60, and 70 miles from the facility, respectively. The maximum moment earthquake magnitudes associated with these faults are 6.9, 6.8, and 7.1 on the Richter scale, respectively. Title 27 CCR requires Class II waste management units to be designed to withstand ground shaking from the Maximum Credible Earthquake (MCE) from the fault that results in the maximum peak ground acceleration at the site. The RWD states that the MCE for the site would result in a peak ground acceleration of 0.45g.
15. Precipitation data for the site is from the Department of Water Resources monitoring station Clay 1 NW DWR # B00 1785 50. The average annual rainfall for the 54-year period between 1931 and 2001 is 16.9 inches. The 24-hour, 1,000-year storm event is 4.7 inches. The 100-year annual precipitation is 32 inches. The average annual evaporation for the 22-year period between 1957 and 1978 is 68 inches.
16. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map.
17. Land uses within one mile of the facility are agricultural, and are used for animal grazing and growing of animal crops.
18. The general site area is underlain by Pliocene-age and Tertiary-age non-marine fluvial and alluvial sediments. Crystalline basement rock underlies the site at great depth. Locally, and to the maximum depth of exploration, the facility area is primarily underlain by Pliocene-age, non-marine fluvial and alluvial sediments of the Laguna Formation in addition to minor surficial fills. Soil beneath the facility generally consists of silty, gravely, and sandy clay, and clayey and silty sand to the maximum depth of exploration.

### **SUBSURFACE AND GROUNDWATER CONDITIONS**

19. The Discharger performed two subsurface investigations beneath the biosolids storage area between August 2001 and March 2002 as part of a nitrogen characterization study. Groundwater was encountered in two of the 12 borings (B-2 and MW-3) at depths of 26 feet and 18 feet, respectively indicating the presence of a seasonal perched zone of limited extent. The locations of the soil borings and groundwater monitoring wells are shown on Attachment B.
20. The investigations indicate that regional groundwater is present at a depth greater than 145 feet below ground surface. The depth to regional groundwater beneath the site is not known at this time. The Discharger proposed to submit a work plan to drill additional monitoring wells at the facility; one background well, and two down-gradient compliance monitoring wells. This Order requires the Discharger to submit the proposed work plan.
21. The nitrogen characterization studies were performed at the existing, unlined units in response to the detection of elevated levels of nitrate as nitrogen in three lysimeters at the site with a maximum concentration of 408 milligrams per liter (mg/L) of nitrate as nitrogen detected in the soil-pore liquid. The first study found nitrate as nitrogen in the soil beneath the biosolids storage area at concentrations ranging from 4 milligrams per kilogram (mg/kg) to 119 mg/kg with the higher concentrations generally being in the shallowest samples at 5 to 6 feet bgs. The second study found nitrate as nitrogen at concentrations ranging from 1.5 mg/kg to 5.3 mg/kg with the higher concentrations generally being in the shallowest samples at 3.5 feet bgs. A groundwater sample collected from a perched groundwater zone in boring B-2 contained nitrate as nitrogen at a concentration of 214 mg/L and had electrical conductivity of 5,400 umhos/cm.

### **PROPOSED GROUNDWATER AND UNSATURATED ZONE MONITORING**

22. The Discharger proposes to conduct groundwater monitoring at one background well and two compliance wells that are yet to be installed. The Discharger proposes to monitor the wells quarterly for one year, and semi-annually thereafter. As required by Title 27 CCR, groundwater elevations must be measured quarterly. The Discharger's proposed detection monitoring program for groundwater at the facility satisfies the requirements contained in Title 27 CCR. This Order requires installation of an approved groundwater monitoring system prior to discharge of waste in the lined waste management units.
23. The Discharger proposes to conduct unsaturated zone monitoring by constructing and monitoring a pan lysimeter beneath the leachate collection sump for the Class II surface impoundment. The Discharger's proposed unsaturated zone monitoring program satisfies the requirements contained in Title 27 CCR.
24. For new units, Title 27 CCR Section 20415(e)(6) requires quarterly sampling of all Background Monitoring Points for a period of one year. Since the biosolids storage area

already exists, and is now being lined in accordance with Title 27 CCR, it is an existing unit that does not currently meet regulatory standards for containment. Monitoring and Reporting Program No. R5-2007-\_\_\_\_\_ requires quarterly monitoring for the first year to establish background data. Unsaturated zone monitoring is also required which will provide the earliest possible detection of a release.

### **DESIGN OF WASTE MANAGEMENT UNITS**

25. Title 27 CCR Section 20240 states that waste management units shall be classified according to their ability to contain wastes, and that such classification shall consider the site-specific circumstances relating to the unit's ability to protect water quality.
26. The prescriptive liner requirement for a Class II waste pile given in Title 27 is two feet of compacted clay with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less.
27. The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 CCR for the Class II waste pile. The engineered alternative consists of the following components from the top down:
  - a. 24 inches of compacted fill operations layer.
  - b. Geotextile fabric filter layer.
  - c. 6 inches of Leachate Collection and Removal System (LCRS) gravel.
  - d. Geotextile fabric cushion layer.
  - e. 60-mil-thick High Density Polyethylene (HDPE) geomembrane.
  - f. 12-inch compacted clay liner with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less.
28. The Discharger proposes to construct the waste pile liner system with a 3% slope with drainage to the Class II surface impoundment. Leachate in the waste pile LCRS gravel will also gravity drain to the Class II surface impoundment.
29. The prescriptive liner requirement for a Class II surface impoundment given in Title 27 is a double liner system consisting of two layers of compacted clay that are two feet thick and have hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less. An LCRS is required between the clay liners.
30. The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 CCR for the Class II surface impoundment. The engineered alternative consists of the following components from the top down:
  - a. A primary 80-mil-thick textured HDPE geomembrane.
  - b. A geonet drainage layer, operating as a LCRS.
  - c. A secondary 60-mil-thick HDPE geomembrane.

d. 12-inch compacted clay liner with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less.

31. The Discharger proposes to construct a leachate collection sump at the low end of the Class II surface impoundment to collect any leachate that leaks through the primary 80-mil HDPE geomembrane. The sump will be underlain by a pan lysimeter for unsaturated zone monitoring. Both the sump and the pan lysimeter will be filled with LCRS gravel and have 6-inch diameter riser pipes extending to the surface for monitoring and leachate removal.
32. Section 20080(b) of Title 27 allows the Regional Water Board to consider the approval of an engineered alternative to the prescriptive standard. The Discharger has proposed an HDPE geomembrane in place of the prescribed clay for the secondary liner. In order to approve an engineered alternative in accordance with §20080(b), the Discharger must demonstrate the following:
- a. The prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in §20080(b) [§20080(c)(1)], or would be impractical and would not promote attainment of applicable performance standards [§20080(c)(2)];
  - b. The proposed engineered alternative(s) provides protection against water quality impairment equivalent to the prescriptive standard in accordance with §20080(b)(2) of Title 27 [§20080(b)(2)(B)]; and
  - c. The proposed engineered alternative is consistent with the performance goal in accordance with §20310 of Title 27 [§20080(b)(2)(A)]. §20310 requires that Class II units be designed and constructed to prevent migration of wastes from the units to adjacent geologic materials, groundwater, or surface water.
33. The Discharger has provided information to make the demonstrations described in Finding 32. In both the prescriptive and proposed engineered alternative liner configurations, liquid passing through a hole in the uppermost (primary) geomembrane enters the underlying drainage layer and flows to a leachate collection sump where the liquid is removed. Presence of liquid in the sump is an indication of a leak in the primary liner. In the prescriptive configuration, liquid entering the LCRS flows along the LCRS/clay interface toward the sump. Since the clay is absorptive to some degree, the movement of the liquid (particularly a small trickle) toward the sump is attenuated. With an HDPE geomembrane beneath the LCRS layer, the liquid is conveyed more efficiently, providing earlier detection of penetration of the primary liner.

Containment effectiveness is also improved with the proposed alternative system. Liquids collecting in the LCRS sump are pumped out, but as pumps are rarely able to remove all liquid, there is usually some liquid present in the sump even when the sump pump is operating properly. This constant hydraulic head will eventually penetrate the prescribed secondary clay liner, releasing liquid to the underlying soils, contrary to the performance

goal to prevent migration of wastes from the unit. With the alternative configuration, the secondary liner is a composite liner system consisting of an HDPE geomembrane and one foot of compacted clay. The HDPE geomembrane is essentially impermeable and, with proper construction quality assurance, provides superior containment effectiveness to the prescriptive liner system, particularly in the sump area. Improved containment provides increased assurance of prevention of migration of wastes from the surface impoundment and enhances protection against water quality impairment. Furthermore, the surface impoundment will be underlain by a pan lysimeter as part of the engineered alternative. This will provide early detection of leakage from any portion of the liner system.

The proposed engineered alternative provides improved protection against water quality impairment and prevention of migration of wastes from the surface impoundment as compared to the prescriptive liner, thereby complying with §20080(b)(2) of Title 27.

34. Section 13360(a)(1) of the California Water Code allows the Regional Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
35. The Discharger proposes a liner system which will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations and closure in accordance with the criteria set forth in Title 27 for a Class II waste management unit.
36. The proposed Class II waste pile will cover an area of approximately 4.9 acres, and the Class II surface impoundment will cover an area of approximately 1.03 acres and be 15 feet deep.
37. The proposed Class II surface impoundment will be designed with a capacity of approximately 13.4 acre-feet or 4.36 million gallons. The capacity needed is based on the 100-year wet season plus the 1,000-year, 24-hour storm event, minus wet season evaporation, water used for dust control within the lined area, and the amount of rainfall expected to be absorbed by the operations layer soil. The design capacity was not reduced for rainfall that may be stored in the biosolids.

#### **OPERATION OF WASTE MANAGEMENT UNITS**

38. The facility is permitted to receive biosolids 24 hours per day, seven days per week. Requirements for use periods, capacity, and maximum length of storage are given in WDRs Order No. 95-064 and WDRs Order No. 98-023.
39. The RWD submitted by the Discharger states that accumulated sediment will be periodically removed from the Class II surface impoundment to regain capacity. Pursuant to Title 27 CCR Section 20375(f), this Order requires an inspection of the bottom of the

liner prior to refilling of the impoundment. This Order also requires that sediment be removed when necessary to maintain the required design capacity.

40. The RWD submitted by the Discharger states that water from the Class II surface impoundment will be used for dust control within the lined area of the facility to help maintain capacity in the surface impoundment.
41. This Order requires that the Class II surface impoundment have its full design capacity available by 1 November of each year in order to accommodate rainfall for the wet season.
42. Monitoring and Reporting Program (MRP) No. R5-2007-\_\_\_\_\_ provides requirements for monitoring of leachate in the leachate sump of the Class II surface impoundment. This Order provides requirements for inspection and repair of the liner system if the leakage rate through the primary geomembrane exceeds 500 gallons per day.

#### **CLOSURE, POST-CLOSURE MAINTENANCE, AND FINANCIAL ASSURANCE**

43. The RWD submitted by the Discharger contains a section on preliminary closure and post-closure maintenance for the waste management units. As required by Title 27 CCR, the units will be clean closed. The RWD includes information required by Title 27 CCR Section 21769(b), and includes a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to perform post-closure maintenance. The total amount of the closure cost estimate is \$224,835, and the amount of the post-closure maintenance cost estimate is \$27,300. Given the proposal for clean closure (as required by Title 27 CCR), post closure maintenance costs should be minimal. The Regional Water Board hereby approves these cost estimates. This Order requires that the Discharger maintain financial assurance with the Regional Water Board in at least the amount of these cost estimates.
44. The RWD submitted by the Discharger contains a cost estimate for corrective action of all known or reasonably foreseeable releases as required by Title 27 CCR Section 22222. The amount of the cost estimate is \$53,300 which includes costs for leak testing and replacement of the primary geomembrane and LCRS in the Class II surface impoundment. The Regional Water Board hereby approves this cost estimate. This Order requires that the Discharger maintain financial assurance with the Regional Water Board in at least the amount of this cost estimate.

#### **CEQA AND OTHER CONSIDERATIONS**

45. The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code §21000, *et seq.*, and the CEQA guidelines, in accordance with Title 14, CCR, §15302.



46. On 12 October 2005, the Sacramento County Board of Supervisors approved an updated Use Permit (No. 04-UPB-0427), and found the prior Negative Declaration for the biosolids-spreading project to still be adequate and complete. The Use Permit also allows up to 32,000 cubic yards of biosolids to be stored up to 90 days in the event of wet weather or soil conditions, but requires the biosolids storage area plans to be approved by the Regional Water Board prior to use. This Order provides the required approval.
47. This order implements:
- a. The Basin Plan and
  - b. The prescriptive standards and performance goals of the California Code of Regulations, effective 18 July 1997, and subsequent revisions.
48. Section 13267 of the California Water Code states, in part, “(a) *A regional board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region*” and “(b) (1) *In conducting an investigation..., the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring these reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify evidence that supports requiring the person to provide the reports.*”
49. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the state as required by Title 27 and to assess compliance with this Order.
50. The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The technical reports required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. Synagro West, LLC (facility owner) and Gary Silva (landowner) are responsible for the discharges of waste at the facility subject to this Order and are, therefore, subject to CWC Section 13267(b).

## **PROCEDURAL REQUIREMENTS**

51. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
52. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
53. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
54. Any person adversely affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action. The petition must be received by the State Board within 30 days of the date of issuance of this Order. Copies of the law and regulations applicable to filing the petition will be provided on request.

**IT IS HEREBY ORDERED** that pursuant to Sections 13263 and 13267 of the California Water Code, Synagro West, LLC and Gary Silva, their agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

### **A. PROHIBITIONS**

1. The discharge of 'hazardous waste' at this facility is prohibited. For the purposes of this Order, the terms 'hazardous waste' and 'designated waste' are as defined in Division 2 of Title 27 of the CCR.
2. The discharge of solid waste or liquid waste to surface waters, surface water drainage courses, or groundwater is prohibited, except as authorized by Waste Discharge Requirements Order Nos. 95-064 and 98-023 and any successors, amendments, and revisions thereto.
3. The discharge of wastes outside of a waste management unit or portions of a waste management unit specifically designed for their containment is prohibited.
4. The discharge of domestic wastewater to the surface impoundment is prohibited.
5. The discharge or storage of wastes other than municipal biosolids or storm water runoff from the biosolids area to either of the waste management units is prohibited.

## B. DISCHARGE SPECIFICATIONS

### General Specifications

1. Wastes shall only be discharged into, and shall be confined to, the waste management units (WMUs) specifically designed for their containment.
2. Prior to the discharge of waste to a WMU, all wells within 500 feet of the unit shall have sanitary seals or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Regional Water Board and to the State Department of Water Resources.
3. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the Silva Ranch property.
4. As a means of discerning compliance with Discharge Specification No. B.3, the dissolved oxygen content in the upper zone (one foot) of the surface impoundment shall not be less than 1.0 mg/L.
5. At least 2 feet of freeboard shall be maintained in the Class II surface impoundment at all times.
6. Prior to or by **1 November** of each year, the Class II surface impoundment shall have its full design storage capacity available, minus minor amounts of sediment.
7. Leachate removed from a surface impoundment's primary LCRS shall be discharged back into to the surface impoundment.
8. The depth of the fluid in the leachate sump of the Class II surface impoundment shall be kept at the minimum needed for efficient pump operation (given the pump intake height and cycle frequency), and shall not allow leachate to back up onto the secondary liner system outside of the sump area. If leachate generation in the Class II surface impoundment exceeds 500 gallons per day (gpd) at any time, the Discharger shall inspect and repair the primary geomembrane prior to the next wet season. If inspection and repair do not reduce the leakage rate below 500 gpd, the Discharger shall conduct an electronic leak location survey to locate and repair leaks in the primary liner.
9. Leachate generation by a waste containment unit LCRS shall not exceed 85% of the design capacity of (a) the LCRS, or (b) the sump pump. If leachate generation exceeds this value, then the Discharger shall immediately cease the discharge of waste, excluding leachate, to the waste managements unit and shall notify the Regional Board in writing within **seven days**. Notification shall include a timetable for a remedial action to repair the containment structures or other action necessary to reduce leachate production.

### **Protection From Storm Events**

10. Waste management units shall be designed, constructed and operated to prevent inundation or washout due to flooding events with a 100-year return period.
11. Precipitation and drainage control systems shall be designed, constructed and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 1,000-year, 24-hour precipitation conditions.
12. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site.

### **C. DESIGN AND CONSTRUCTION SPECIFICATIONS**

1. The Class II waste pile for the biosolids storage area shall consist of the following from the top down:
  - a. 24 inches of compacted fill operations layer.
  - b. Geotextile fabric filter layer.
  - c. 6 inches of Leachate Collection and Removal System (LCRS) gravel.
  - d. Geotextile fabric cushion layer.
  - e. 60-mil-thick High Density Polyethylene (HDPE) geomembrane.
  - f. 12-inch compacted clay liner with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less.
2. The Class II surface impoundment for runoff from the biosolids storage area shall consist of the following from the top down:
  - a. A primary 80-mil-thick textured HDPE geomembrane.
  - b. A geonet drainage layer, operating as a LCRS.
  - c. A secondary 60-mil-thick HDPE geomembrane.
  - d. 12-inch compacted clay liner with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less.
3. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered

alternative and approval by the Regional Water Board.

4. The unsaturated zone monitoring system shall be capable of measuring both saturated and unsaturated flows that may occur as a result of a release from the waste management unit.
5. The Class II surface impoundment shall be designed, constructed, and operated to maintain at least two feet of freeboard.
6. The design capacity of the surface impoundment shall accommodate rainfall and leachate produced from a 1,000-year, 24-hour precipitation event, and the 100-year wet season precipitation.
7. The Class II surface impoundment shall have permanent markings on the liner, or a permanent freeboard gauge so that the freeboard can be observed and recorded at any time. The markings or gauge shall have increments no greater than 6-inches.
8. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the surface impoundment.
9. Materials used to construct the LCRS shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the surface impoundment and the post-closure maintenance period.
10. The LCRS shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by each surface impoundment and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of the fluid in the LCRS sump shall remain below the top of the sump and shall normally reside at a level no greater than the minimum needed for safe pump operation.
11. The LCRS shall be designed and operated to function without clogging through the scheduled closure of the surface impoundment. The surface impoundment shall be equipped to facilitate annual testing to demonstrate proper operation as required by §20340(d) of Title 27.
12. The surface impoundment shall be designed, constructed, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundment and by wave action at the water line.

13. Following construction and prior to the discharge of waste, the Discharger shall submit a final CQA Report. The CQA Report shall demonstrate that the waste management units were constructed in accordance with the approved construction plans, this Order, and document all required testing in the approved CQA Plan. The CQA report shall also provide a certification statement by the registered professional Civil Engineer or Certified Engineering Geologist that the waste management units were constructed in accordance with the plans, this Order, and the CQA Plan.
14. Waste shall not be placed in new units without a final inspection from Regional Water Board staff and approval of the CQA Report.
15. Waste shall not be placed in the new units until the discharger has installed a groundwater monitoring network and submitted the installation report required by this Order.

#### **D. DETECTION MONITORING SPECIFICATIONS**

1. If leachate is detected in the unsaturated zone monitoring system of the surface impoundment indicating a leak in the containment structures, the Discharger shall:
  - a. Immediately cease discharge of waste to the waste management units (excluding leachate to the surface impoundment) until the leaks can be found and repaired.
  - b. Report to the Regional Water Board within 72 hours that the containment structures have failed.
  - c. Submit written notification of the release to the Regional Water Board within seven days, the notification should include a time schedule to repair the containment structures.
  - d. Discharge of wastes to the waste pile will not resume until the Regional Water Board has determined that repairs to the liners are complete and there is no further threat to water quality.

#### **E. SOLIDS DISPOSAL**

1. Sediment or solids that accumulate in the Class II surface impoundment shall be removed when necessary to maintain the designed storage capacity. Sludge and solids removal shall be accomplished in a manner that ensures the continued integrity of liners and leachate collection systems in accordance with the facility's operations plan.
2. Following sediment/solids removal from the Class II surface impoundment, the liner system shall be inspected for damage and any damage shall be repaired.
3. Solids or sediment removed from the Class II surface impoundment that are not used for operations layer in the waste pile area shall be properly characterized prior to offsite disposal at a properly permitted landfill facility.

## F. CLASS II SURFACE IMPOUNDMENT AND WASTE PILE CLOSURE

1. The closure of each surface impoundment and waste pile shall be under the direct supervision of a California registered civil engineer or certified engineering geologist.
2. At closure of the surface impoundment and waste pile, all residual wastes, including liquids, sludges, precipitates, settled solids, and liner materials and adjacent natural geologic materials contaminated by wastes, shall be completely removed and discharged to a waste management unit approved by Regional Water Board staff. If after reasonable attempts, the Discharger demonstrates the removal of all remaining contamination is infeasible, the impoundment shall be closed as a landfill.

## G. RECEIVING WATER LIMITATIONS

### Water Quality Protection Standards

The concentrations of Constituents of Concern in waters passing through the Points of Compliance shall not exceed the Concentration Limits established pursuant to Monitoring and Reporting Program No. R5-2007-\_\_\_\_\_, which is attached to and made part of this Order.

## H. FINANCIAL ASSURANCE

1. At least **30 days** prior to placing waste in the waste management units, the Discharger shall provide the assurances of financial responsibility to the Regional Water Board as required by Title 27 CCR, Division 2, Subdivision 1, Chapter 6 to ensure closure and post-closure maintenance of each waste management unit in accordance with its approved closure/post-closure plan in the amount of the cost estimates approved in Finding No. 43 of this Order. The assurances of financial responsibility shall provide that funds for closure shall be available to the Regional Water Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The financial assurance fund for closure shall be established **prior to discharging waste to the waste management units**.
2. At least **30 days** prior to placing waste in the waste management units, the Discharger shall provide the assurances of financial responsibility to the Regional Water Board as required by Title 27 CCR, Division 2, Subdivision 1, Chapter 6 for initiating and completing corrective action for all known or reasonably foreseeable releases in the amount of the cost estimate approved in Finding No. 44 of this Order. The assurances of financial responsibility shall provide that funds for corrective action shall be available to the Regional Water Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The financial assurance fund for corrective action shall be established **prior to discharging waste to the waste management units**.

3. The Discharger shall, by **30 April each year**, adjust the financial assurance funds required by Financial Assurance H.2 and H.2 to account for inflation and any changes in facility design, construction, or operation.

## I. PROVISIONS

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Discharges Regulated by Title 27 CCR, dated September 2003, which are hereby incorporated into this Order. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. The Discharger shall comply with Monitoring and Reporting Program No. R5-2007-\_\_\_\_\_, which is attached to and made part of this Order. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls and monitoring groundwater, the unsaturated zone, and surface waters throughout the active life of the waste management units and the post-closure maintenance period. A violation of Monitoring and Reporting Program No. R5-2007-\_\_\_\_\_ is a violation of these waste discharge requirements.
3. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, California Code of Regulations, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
4. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared by a California-registered professional:
  - a. By **1 October 2007**, the Discharger shall submit a work plan to install a groundwater quality monitoring system meeting the requirements on Title 27 CCR. The work plan shall address both the perched groundwater and the underlying regional aquifer.
  - b. By **15 November 2007**, the Discharger shall submit a groundwater monitoring system installation report in accordance with the approved work plan.
5. By **31 January 2008**, the Discharger shall submit a Water Quality Protection Standard



Report in accordance with Title 27 CCR Section 20415(e)(7), proposing data analysis methods to establish the Concentration Limits and background groundwater quality, and that includes all information required by Section C of MRP No. R5-2007-\_\_\_\_\_. The specifications for the proposed data analysis methods shall include a detailed description of the criteria to be used for determining measurably significant evidence of any release from the surface impoundment and for determining compliance with the Water Quality Protection Standard. The Water Quality Protection Standard Report shall address perched groundwater, the underlying regional aquifer, and the unsaturated zone. This may be submitted as part of the Annual Monitoring Report. Refer to Section C of MRP No. R5-2007-\_\_\_\_\_.

6. By **31 January 2009**, the Discharger shall establish Concentration Limits for each constituent of concern using the methods in the approved Water Quality Protection Standard Report and at least four quarters of background groundwater data. This may be submitted as part of the Annual Monitoring Report. Refer to Section C of MRP No. R5-2007-\_\_\_\_\_.
7. The Discharger shall maintain legible records of the volume and type of waste discharged to and from the surface impoundment and the manner of the discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Regional Water Board and of the State Water Resources Control Board; copies of these records shall be sent to the Regional Water Board.
8. The Discharger shall provide proof to the Regional Water Board within **60 days** after completing final closure of the waste management units that the deed to the surface impoundment and waste pile facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
  - a. the parcel has been used for disposal of wastes;
  - b. land use options for the parcel are restricted in accordance with the post-closure land uses set forth in the post-closure plan and in WDRs for the surface impoundment and waste pile; and
  - c. in the event that the Discharger defaults on carrying out either the post-closure maintenance plan or any corrective action needed to address a release, then the responsibility for carrying out such work falls to the property owner.
9. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Regional Water Board.
10. The Regional Water Board will review this Order periodically and may revise

requirements when necessary.

11. This Order shall take effect upon the date of adoption.

#### **J. REPORTING REQUIREMENTS**

1. The Discharger shall comply with the reporting requirements specified in this Order, in Monitoring and Reporting Program Order No. R5-2007-\_\_\_\_\_ and in the Standard Provisions and Reporting Requirements dated September 2003.
2. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Regional Water Board.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on \_\_\_\_\_.

---

PAMELA C. CREEDON, Executive Officer

WLB  
Attachments

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2007-\_\_\_\_\_

FOR  
SYNAGRO WEST, LLC AND GARY SILVA  
SILVA RANCH WET WEATHER BIOSOLIDS STORAGE FACILITY  
CLASS II WASTE PILE AND CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, AND CLOSURE  
SACRAMENTO COUNTY

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements Order No. R5-2007-\_\_\_\_\_ (WDRs). Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements dated September 2003, constitutes noncompliance with the WDRs and with the California Water Code, which can result in the imposition of civil monetary liability.

**A. MONITORING**

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater and the unsaturated zone, in accordance with Monitoring Specifications in Standard Provisions and Reporting Requirements (2003). All monitoring shall be conducted in accordance with the sampling procedures outlined in Section 6 of the 8 January 2007 *Construction Workplan*.

All point-of-compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, and leachate monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables 1 through 4.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified.

The Discharger may, upon approval, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

The Discharger shall conduct inspections and monitoring at the following frequencies:

Facility Inspection and Monitoring		
Activity	Frequency	Notes
<b>Inspections</b>		
Inspect the operations soil in the holding area. Repair/restore any depressions, ruts or gouges	Weekly	Record date of inspection, conditions observed and any resulting action.
Inspect the perimeter berms. Repair or restore any depressions, ruts or gouges	Weekly	
Inspect the detention basin primary liner	Weekly	
Inspect the sediment level in the basin	Weekly and after significant storm events	
Inspect the level of water in the detention basin	Weekly	
Inspect the primary liner leak detection sump for the presence of water	Weekly	
Inspect the vadose zone sump for the presence of water	Weekly	
Inspect the primary liner in the detention basin for scratches, wear, or holes	Annually, prior to the wet season.	All water and sediment should be removed from the basin prior to inspection.
Test the LCRS	Annually, prior to the wet season.	
<b>Monitoring</b>		
Surface Impoundment Monitoring	Weekly, Monthly, Quarterly	
Groundwater Monitoring	Quarterly in September, December, March, and June	Quarterly monitoring for a period of 1 year and semiannually thereafter. Quarterly groundwater level monitoring continues. Maintain a log onsite of the groundwater levels.
	Semiannually in September and March	
	Semiannually in September and March	
Unsaturated Zone Monitoring	Weekly, Quarterly	

## 1. Surface Impoundment

Samples shall be collected from the surface impoundment samples in accordance with Table 1.

<b>Table 1 – Surface Impoundment Monitoring</b>		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Freeboard	feet and tenths, MSL	Weekly
Remaining Capacity	acre-feet	Monthly
Dissolved Oxygen	mg/L	Monthly
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Quarterly
BOD <sup>2</sup>	mg/L	Quarterly
Chloride	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Ammonia as Nitrogen	mg/L	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly

<sup>1</sup> 5-day, 20°C biochemical oxygen demand (BOD)

## 2. Groundwater

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 of Title 27 in accordance with an approved Monitoring Program. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the sampling procedures outlined in Section 6 of the 8 January 2007 *Construction Workplan*.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table 2.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented

using a Stiff diagram, a Piper graph, or a Schueller plot.

Table 2 – Groundwater Monitoring		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Groundwater Elevation	feet and hundredths, MSL	Quarterly
Temperature	°C	Quarterly/Semiannually <sup>1</sup>
Specific Conductance	umhos/cm	Quarterly/Semiannually <sup>1</sup>
pH	pH number	Quarterly/Semiannually <sup>1</sup>
Turbidity	NTU	Quarterly/Semiannually <sup>1</sup>
<u>Monitoring Parameters</u>		
<u>Nitrogen:</u>		
Ammonia	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Kjeldahl Nitrogen	mg/L	Quarterly/Semiannually <sup>1</sup>
Nitrate as Nitrogen	mg/L	Quarterly/Semiannually <sup>1</sup>
Nitrite	mg/L	Quarterly/Semiannually <sup>1</sup>
<u>Bacteriological/Biological:</u>		
Fecal Coliform	mg/L	Quarterly/Semiannually <sup>1</sup>
Chemical Oxygen Demand	mg/L	Quarterly/Semiannually <sup>1</sup>
<u>Standard Minerals:</u>		
Total Dissolved Solids	mg/L	Quarterly/Semiannually <sup>1</sup>
Calcium	mg/L	Quarterly/Semiannually <sup>1</sup>
Magnesium	mg/L	Quarterly/Semiannually <sup>1</sup>
Potassium	mg/L	Quarterly/Semiannually <sup>1</sup>
Sodium	mg/L	Quarterly/Semiannually <sup>1</sup>
Bicarbonate	mg/L	Quarterly/Semiannually <sup>1</sup>
Carbonate	mg/L	Quarterly/Semiannually <sup>1</sup>
Chloride	mg/L	Quarterly/Semiannually <sup>1</sup>
Fluoride	mg/L	Quarterly/Semiannually <sup>1</sup>
Sulfate	mg/L	Quarterly/Semiannually <sup>1</sup>
Phosphate	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Phosphorus	mg/L	Quarterly/Semiannually <sup>1</sup>
Boron	mg/L	Quarterly/Semiannually <sup>1</sup>
Iron	mg/L	Quarterly/Semiannually <sup>1</sup>
Manganese	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Hardness	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Alkalinity	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Cations	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Anions	mg/L	Quarterly/Semiannually <sup>1</sup>
Hydroxide	mg/L	Quarterly/Semiannually <sup>1</sup>

Table 2 – Groundwater Monitoring		
<u>Title 22 Metals:</u>		
Antimony	ug/L	Quarterly/Semiannually <sup>1</sup>
Barium	ug/L	Quarterly/Semiannually <sup>1</sup>
Beryllium	ug/L	Quarterly/Semiannually <sup>1</sup>
Cadmium	ug/L	Quarterly/Semiannually <sup>1</sup>
Chromium	ug/L	Quarterly/Semiannually <sup>1</sup>
Cobalt	ug/L	Quarterly/Semiannually <sup>1</sup>
Copper	ug/L	Quarterly/Semiannually <sup>1</sup>
Lead	ug/L	Quarterly/Semiannually <sup>1</sup>
Molybdenum	ug/L	Quarterly/Semiannually <sup>1</sup>
Nickel	ug/L	Quarterly/Semiannually <sup>1</sup>
Vanadium	ug/L	Quarterly/Semiannually <sup>1</sup>
Zinc	ug/L	Quarterly/Semiannually <sup>1</sup>
Arsenic	ug/L	Quarterly/Semiannually <sup>1</sup>
Selenium	ug/L	Quarterly/Semiannually <sup>1</sup>
Silver	ug/L	Quarterly/Semiannually <sup>1</sup>
Thallium	ug/L	Quarterly/Semiannually <sup>1</sup>
Mercury	ug/L	Quarterly/Semiannually <sup>1</sup>
<u>Organics:</u>		
Phenols	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Organic Carbon	mg/L	Quarterly/Semiannually <sup>1</sup>
Total Organic Halogens	mg/L	Quarterly/Semiannually <sup>1</sup>

<sup>1</sup> Quarterly for the first year (four quarters) and semiannually thereafter.

### 3. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 of Title 27 in accordance with an approved monitoring plan. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the sampling procedures outlined in Section 6 of the 8 January 2007 *Construction Workplan*.

Unsaturated zone samples shall be collected from the monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table 3. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point.

Pan lysimeters shall be checked weekly for liquid. Monitoring shall include the total volume of liquid removed from the system. If liquid is detected, the Discharger shall

perform the actions in Section D.1 of WDRs Order No. R5-2007-\_\_\_\_\_. Unsaturated zone monitoring information and data shall be included with the monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

While providing effective and early determination of a release, the characteristics of pan lysimeters do not lend themselves to background monitoring. Therefore, in lieu of using a pan lysimeter to collect background samples, data from the pan lysimeter will be compared to groundwater, wastewater, and if necessary, surface water, to determine the origin of the water captured in the pan lysimeter.

<b>Table 3 – Unsaturated Zone Monitoring</b>		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Flow Rate	gallons/day	Weekly
Temperature	°C	Quarterly
Specific Conductance	umhos/cm	Quarterly
pH	pH number	Quarterly
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Quarterly
Chloride	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Ammonia as Nitrogen	mg/L	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly

#### 4. LCRS Monitoring

The LCRS sump shall be inspected weekly for leachate. Upon detection of leachate in a previously dry LCRS, the Discharger shall immediately collect a grab sample of the leachate and shall continue to collect grab samples of the leachate at the following frequencies thereafter. The LCRS shall be sampled and analyzed for the following:

<b>Table 4 – LCRS Monitoring</b>		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Flow Rate	gallons/day	Weekly
Temperature	°C	Quarterly
Specific Conductance	umhos/cm	Quarterly



Table 4 – LCRS Monitoring		
pH	pH number	Quarterly
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Quarterly
Chloride	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Ammonia as Nitrogen	mg/L	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly

All LCRSs shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Regional Water Board and shall include comparison with earlier tests made under comparable conditions.

## 5. Facility Monitoring

### a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess any damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section F.4.f of Standard Provisions and Reporting Requirements. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

### b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following major storm events. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

## B. REPORTING

The Discharger shall report monitoring data and information **quarterly** during the first year (four quarters) of monitoring and **semiannually** thereafter, as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Historical and current monitoring data shall be graphed at least once annually. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. A short discussion of the monitoring results, including notations of any water quality violations shall precede the tabular summaries. Data shall also be submitted in an acceptable digital format.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Field and laboratory tests shall be reported in the quarterly monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Regional Water Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Professional Geologist and signed/stamped by the registered professional.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

### REQUIRED MONITORING REPORTS AND SUBMITTAL DATES:

#### 1. Quarterly Groundwater, Unsaturated Zone, and Leachate Monitoring Reports

The quarterly monitoring reports shall include all water quality data and observations

collected during the reporting period and submitted per the Reporting Due Dates in Section B.6 of this Monitoring and Reporting Program. At a minimum the sampling and data collection in Tables 1 through 4 of this Monitoring and Reporting Program, Standard Provisions and Reporting Requirements (2003), and Waste Discharge Requirements shall be reported.

## **2. Annual Monitoring Summary Report**

The Discharger shall submit an Annual Monitoring Summary Report to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements (2003), Section VIII.B of the *"Reports to be Filed with the Board."*

## **3. Facility Monitoring Report**

Annually, prior to the anticipated rainy season, but no later than **1 November**, the Discharger shall conduct an inspection of the facility. The inspection shall include a review of the exposed portions of the facility to ensure that all components are in good working order, as well as an assessment of any damage to the surface water drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section XII.S of Standard Provisions and Reporting Requirements (2003). The inspection shall also verify that the Class II surface impoundment has its full design capacity available.

## **4. Response to a Release**

If the Discharger determines that there is either significant statistical evidence of a release (*i.e.* the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a release is tentatively identified) or physical evidence of a release, the Discharger shall immediately notify the Regional Water Board verbally as to the Monitoring Point(s) and constituent(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination and implement Response to Release section of the Standard Provisions and Reporting Requirements (2003).

## **5. Water Quality Protection Standard Report**

For, any proposed changes in a statistical method or concentration limits for a constituent of concern or monitoring parameter, the Discharger shall submit a Water Quality Protection Standard Report and include the information required in Section C.1 of this Monitoring Reporting Program. Any changes to Water Quality Protection Standards shall be approved by the Executive Officer in a Revised Monitoring and

Reporting Program.

## 6. Submittal Dates

<b>Groundwater, Unsaturated Zone and Leachate Monitoring Reports</b>			
<b>Reporting Type</b>	<b>Sampling Frequency and Data Reported</b>	<b>Reporting Period</b>	<b>Report Date Due</b>
<b>Quarterly Monitoring Reports</b>	Weekly, Monthly, and Quarterly	1 January – 31 March 1 April – 30 June 1 July – 30 September 1 October – 31 December	<b>30 April</b> <b>31 July</b> <b>31 October</b> <b>31 January</b>
<b>Semiannual Monitoring Reports</b>	Daily, Weekly, Monthly, Quarterly, and Semiannually	1 January – 30 June 1 July – 31 December	<b>31 July</b> <b>31 January</b>

**Annual Monitoring Summary Report**

**31 January**

**Facility Monitoring Report**

**15 November**

**Response to a Release**

**as necessary**

**Water Quality Protection Standard Report**

**as necessary**

## C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

### 1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Water Quality Protection Standard, or any modification thereto, shall be submitted for review and approval, for each monitored medium.

The report shall:

- a. Identify **all distinct bodies of surface and groundwater** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the groundwater monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

## 2. **Constituents of Concern**

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables 1 through 4 for the specified monitored medium.

### **Monitoring Parameters**

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables 1 through 4 for the specified monitored medium.

## 3. **Concentration Limits**

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or
- b. By an acceptable alternate statistical method in accordance with §20415 of Title 27.

The Discharger shall collect four quarters (one year) of background data prior to

developing Concentration Limits.

#### **4. Point of Compliance**

The point of compliance for the Concentration Limits given in C.3 at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by:

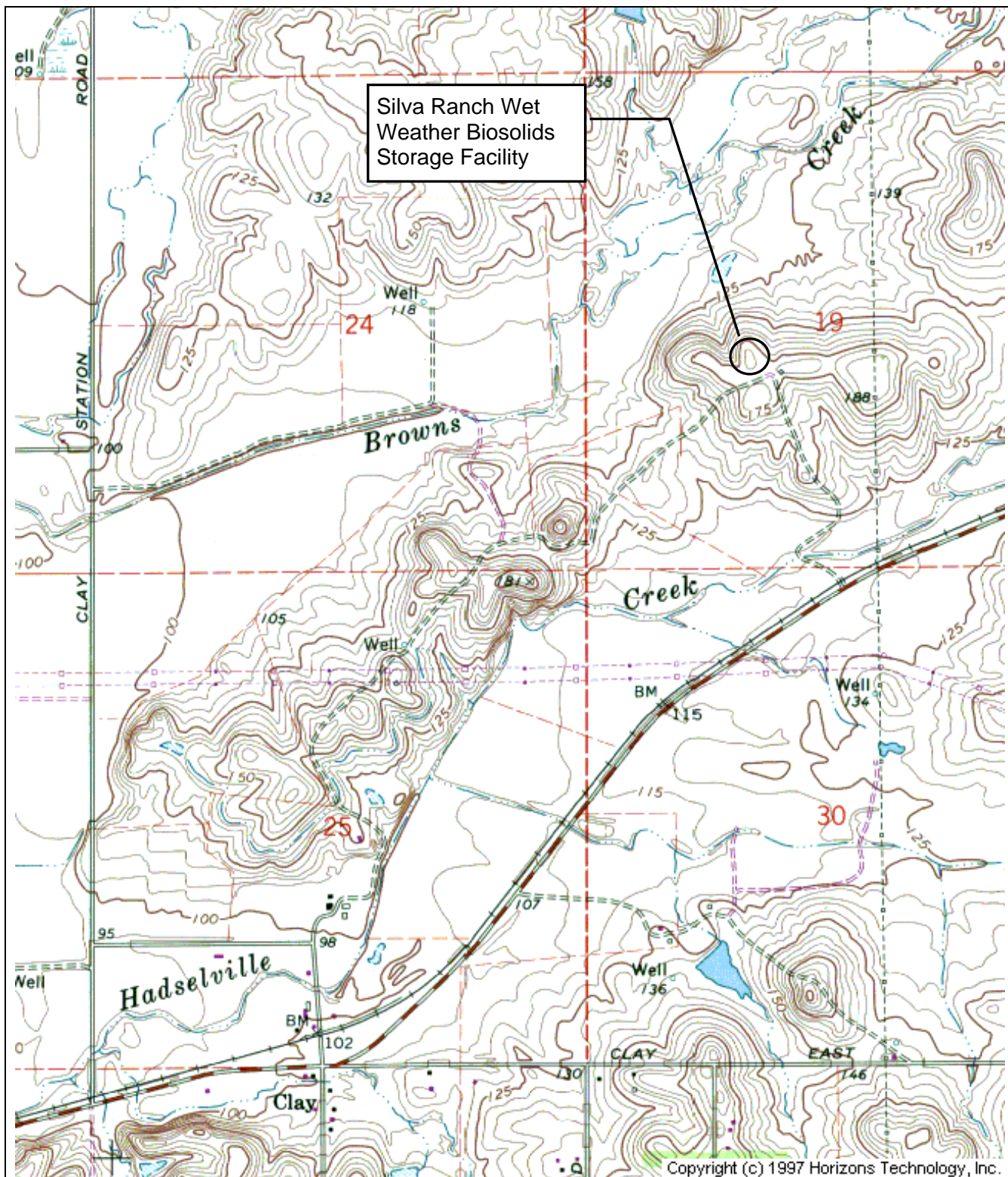
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PAMELA C. CREEDON, Executive Officer

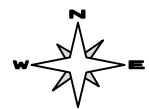
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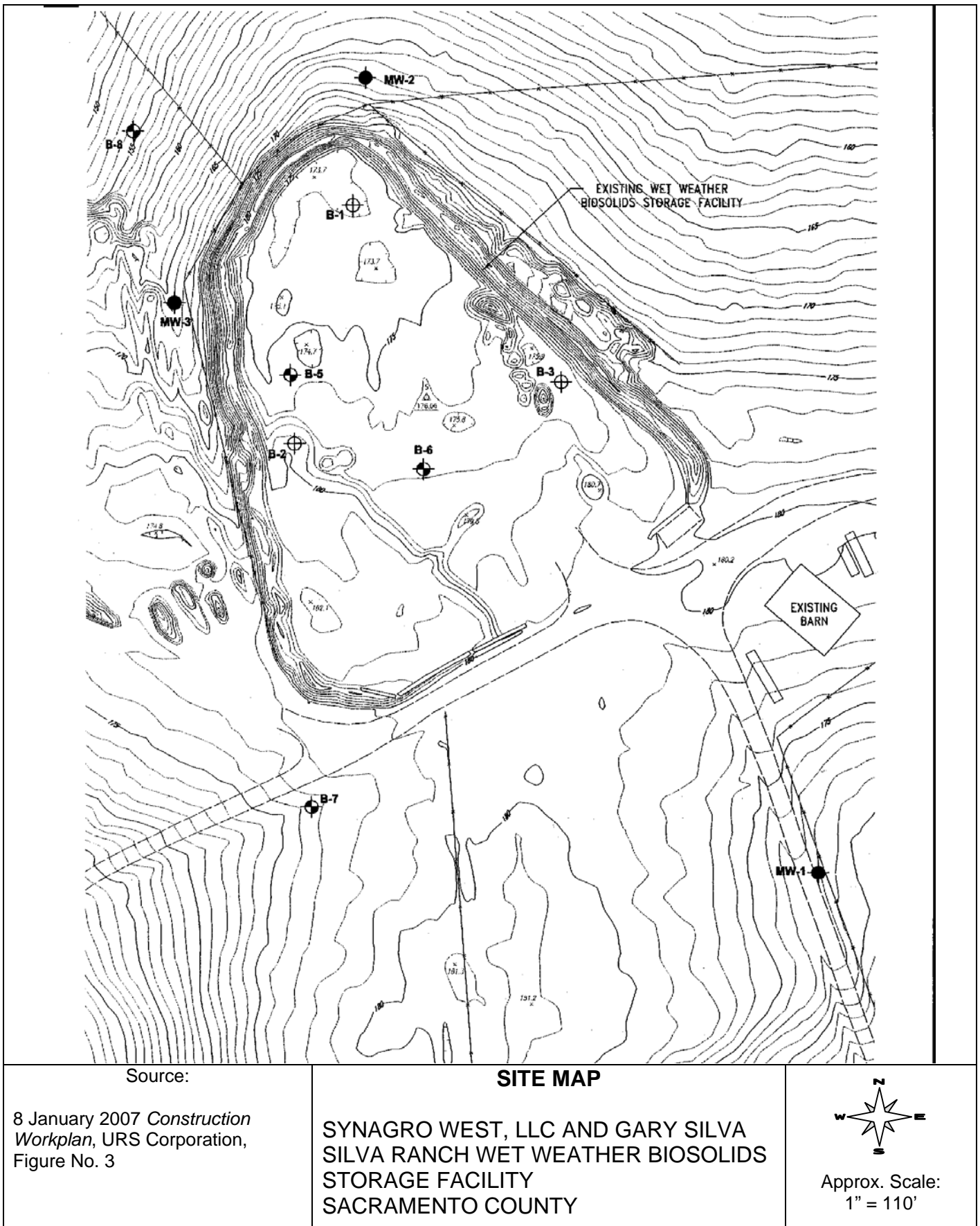
(Date)

WLB



Drawing Reference:

U.S.G.S TOPOGRAPHIC MAP  
CLAY 7.5 MINUTE  
QUADRANGLE**VICINITY MAP**SYNAGRO WEST, LLC AND GARY SILVA  
SILVA RANCH WET WEATHER BIOSOLIDS  
STORAGE FACILITY  
SACRAMENTO COUNTYApprox. Scale:  
1 in. = 1,800 ft.





## INFORMATION SHEET

ORDER NO. R5-2007-\_\_\_\_\_  
SYNAGRO WEST, LLC AND GARY SILVA  
SILVA RANCH WET WEATHER BIOSOLIDS STORAGE FACILITY  
CLASS II WASTE PILE AND CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, AND CLOSURE  
SACRAMENTO COUNTY

The Silva Ranch is a 2,800-acre property used for pasturing and growing crops for a variety of animals. Municipal biosolids are accepted at the ranch and applied to land under Waste Discharge Requirements (WDRs) Order No. 95-064 and WDRs Order No. 98-023. These Orders require the Discharger to construct waste management units meeting the requirements of Title 27, California Code of Regulations (Title 27) for storage of biosolids during wet weather when they cannot be applied to land. The Discharger proposes a facility will consist of a Class II waste pile and Class II surface impoundment that will receive biosolids during wet weather. The area where the facility will be constructed is shown on Attachments A and B of this Order.

The waste pile will be used for discharge and storage of biosolids, and the surface impoundment will capture and store runoff from the waste pile. As required by Title 27, the surface impoundment will be designed for a 1000-year, 24-hour storm event, plus expected annual precipitation, while maintaining at least two feet of freeboard. Annual precipitation required by this Order is based on a 100-year wet season.

The 24-hour, 1,000-year storm event is 4.7 inches. The 100-year annual precipitation is 32 inches. The average annual evaporation is 68 inches. Based on this information, the Discharger proposes a Class II surface impoundment with a storage capacity of approximately 13.4 acre-feet to store runoff from a combined area of approximately 5.9 acres for the waste pile and the impoundment. The proposed storage capacity is adjusted for expected evaporation, moisture retained in the operations layer soil, and use of stored wastewater for dust control within the waste pile area.

The Discharger performed two subsurface investigations beneath the biosolids storage area between August 2001 and March 2002 as part of a nitrogen characterization study. Groundwater was encountered in two of the 12 borings (B-2 and MW-3) at depths of 26 feet and 18 feet, respectively indicating the presence of a seasonal perched zone of limited extent. The locations of the soil borings and groundwater monitoring wells are shown on Attachment B. The investigations also indicate that regional groundwater is present at a depth greater than 145 feet below ground surface. The depth to regional groundwater beneath the site is not known at this time. The Discharger proposes to submit a work plan to drill additional monitoring wells at the facility; one background well, and two down-gradient compliance monitoring wells. This Order requires the Discharger to submit the proposed work plan.

The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 CCR for the Class II waste pile. The engineered alternative consists of the following components from the top down:

- a. 24 inches of compacted fill operations layer.

- b. Geotextile fabric filter layer.
- c. 6 inches of Leachate Collection and Removal System (LCRS) gravel.
- d. Geotextile fabric cushion layer.
- e. 60-mil-thick High Density Polyethylene (HDPE) geomembrane.

The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 CCR for the Class II surface impoundment. The engineered alternative consists of the following components from the top down:

- a. A primary 80-mil-thick textured HDPE geomembrane.
- b. A geonet drainage layer, operating as a LCRS.
- c. A secondary 60-mil-thick HDPE geomembrane.
- d. 12-inch compacted clay liner with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less.

Information regarding the approval of these engineered alternative liner systems is included in the Findings of this Order.

Surface water drainage is to Browns Creek, which is a tributary to Laguna Creek, which is tributary to the Cosumnes River, which is tributary to the Mokelumne River, which is tributary to the Delta, as depicted on interagency hydrologic maps prepared by the California Department of Water Resources in August 1986.

WLB